

OPTIMAL RESPIRATORY CARE

ILA & MAPS

Safety Session

Ventilator Management

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OBJECTIVES

- ▶ Identify actionable best practices for patterns and factors associated with respiratory care protocols
- ▶ Understand different strategies prevent for Acute Respiratory Distress Syndrome (ARDS) in hospitalized patients
- ▶ Discuss how to reduce ventilator-associated events
- ▶ Review and discuss ABCDEF Bundle

MECHANICAL VENTILATION

- ▶ Affects 800,000 hospitalized patients in the United States each year
- ▶ Five to 10 percent of mechanically ventilated patients develop a ventilator-associated event (VAE)

40-80,000 people



HARM FROM MECHANICAL VENTILATION

- ▶ Historically, ventilator-associated pneumonia (VAP) was considered one of the most lethal healthcare-associated infections
- ▶ 35% mortality rate for ventilated patients
 - ▶ 24% for patients 15–19 years
 - ▶ 60% for patients 85 years and older

NOT JUST MORTALITY

Short-term

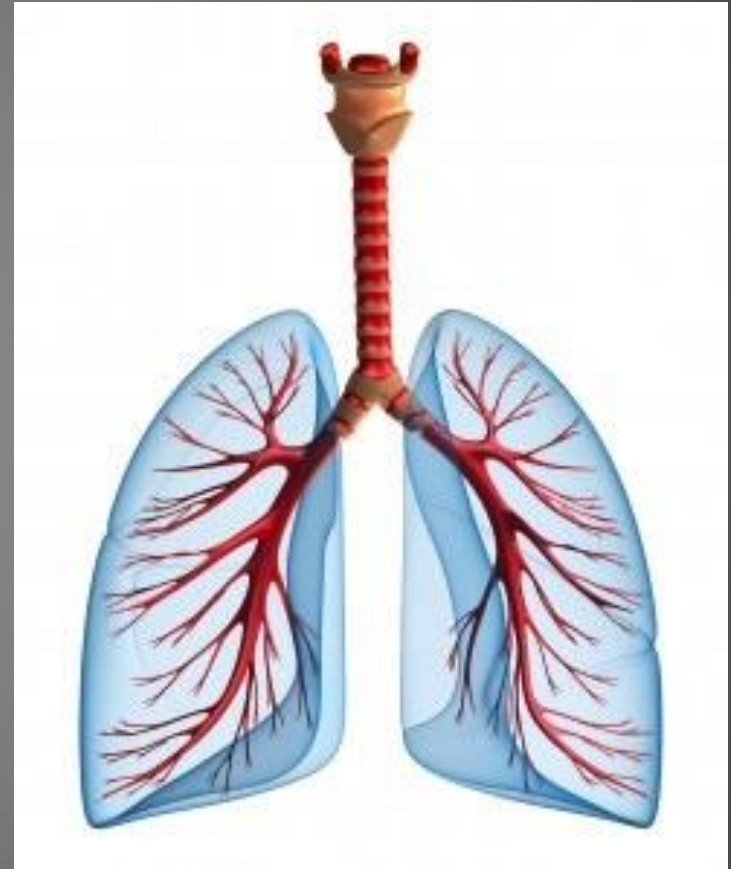
- ▶ Increase in complications
 - ▶ VAP
 - ▶ Sepsis
 - ▶ Acute respiratory distress syndrome (ARDS)
 - ▶ Pulmonary embolism
 - ▶ Barotrauma
 - ▶ Pulmonary edema
- ▶ Increase in health care costs
- ▶ Increase in length of stay

Long-term

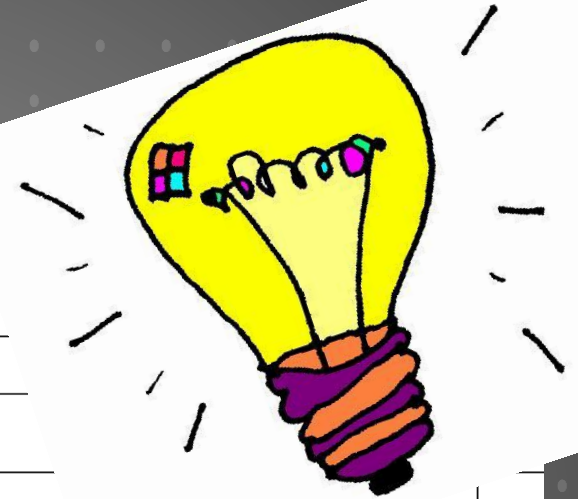
- ▶ Slower overall recovery time
- ▶ Debilitating physical disabilities
- ▶ Lingering cognitive dysfunction
- ▶ Psychiatric issues, including anxiety, depression, and post-traumatic stress disorder

ACCOMPLISH OPTIMAL RESPIRATORY CARE BY:

- ▶ Understanding your risk
 - ▶ collect the data
- ▶ Preventing intubations
- ▶ Reducing complications
- ▶ Liberation from ventilator



KNOW YOUR DATA



Mini VAE Process Improvement Discovery Tool (Minimum 10 charts/Maximum 20 charts)												
Instructions: (1) Enter Y or N in each box for each chart. Then identify which rows the most 'N's are in.												
Process	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:	Chart #:
Pt had a subglottic suction ETT present												
Pt was ventilated with 6-8ml/kg of TV												
Pt was treated for pain prior to receiving sedation												
Pt received 3 boluses doses of sedative prior to beginning an infusion												
Pt did not receive a benzodiazepine												
If pt did receive sedation it was goal directed, targeting a RASS score of -1 to +1												
Pt had a daily coordinated SAT & SBT												
Pt was screened for delirium every shift												
Pt had concentrated sleep (e.g. 4-6hr/night)												
Pt was mobilized to their highest level of functional capacity every day												
The ICU has an open visitation policy												
ICU family participated/present in rounds												
Hand Hygiene compliance rate is greater than 85% in the ICU												
Other (specify)												

VAE DEFINITION TIERS¹³

Respiratory
status
component

Patient on mechanical ventilation > 2 days

**Baseline period of stability or improvement, followed
by sustained period of worsening oxygenation**

VAC

Infection /
inflammation
component

General evidence of infection/inflammation

IVAC

Additional
evidence

Positive results of microbiological testing

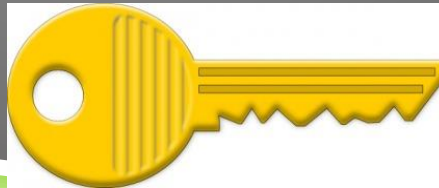
Possible or Probable VAP

13. Device-associated module: ventilator-associated event. Atlanta, GA: Centers for Disease Control and Prevention. January 2014.

http://www.cdc.gov/nhsn/PDFs/pscManual/10-VAE_FINAL.pdf. Accessed September 21, 2015.

THE NEW VAE'S SEARCH

- ▶ After 2012 VAP's were identified by stages based on Oxygenation, (VAC) Symptoms, (IVAC) and finally lab cultures (VAP).
- ▶ Each built on the earlier VAE
- ▶ This changes how we review ventilator patients
- ▶ The **key** item this time is not CXR or Sputum cultures, but **vent settings** that would trigger a VAC
 - ▶ **Drives real-time data collection!**



VAE PREDICTIVE MODEL

- ▶ A concurrent review, using a predictive model, allows you to intervene just prior to the VAC occurrence. CDC's NHSN uses Calendar days versus 24 hours so that at the stroke of midnight the VAC would occur.
- ▶ Monitoring the FiO₂ and PEEP allows you to forecast that at midnight of day two of vent changes, the VAC will occur unless something changes.



MOST VAE'S ARISE FROM:

- ▶ ARDS
- ▶ *Atelectasis*
- ▶ *Pneumonia*
- ▶ Pulmonary edema



So how do we prevent these?
The largest volume of VAE!

CROSS CUTTING INTERVENTIONS CAN PREVENT HARM & INTUBATIONS

► Optimize:

1. Opioid and sedation management

- Can a patient be “too comfortable?”

2. Mobilization

- Hospitalized patients need to be mobilized to their fullest potential from admission

3. Hand Hygiene

- All 7 HAI's impacted

1 OPIOID & SEDATION MANAGEMENT



ADE



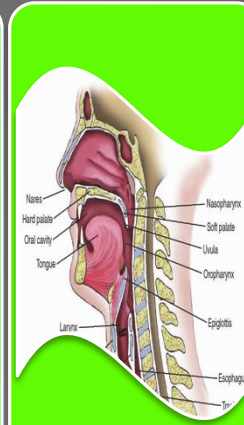
Failure
to
Rescue



Deliri
um



Falls



Airway
Safety



VTE



VAE

W A K E - U P

<http://www.hret-hiin.org/engage/up-campaign.html>

2 EARLY PROGRESSIVE MOBILITY



Falls



PrU



Delirium



CAUTI



VAE



VTE



Readmissions

GET - UP

<http://www.hret-hiin.org/engage/up-campaign.html>

3 HAND HYGIENE

CDI

CAUTI

SSI

VAE

CLABSI

Sepsis

MDRO

S O A P - U P

<http://www.hret-hiin.org/engage/up-campaign.html>

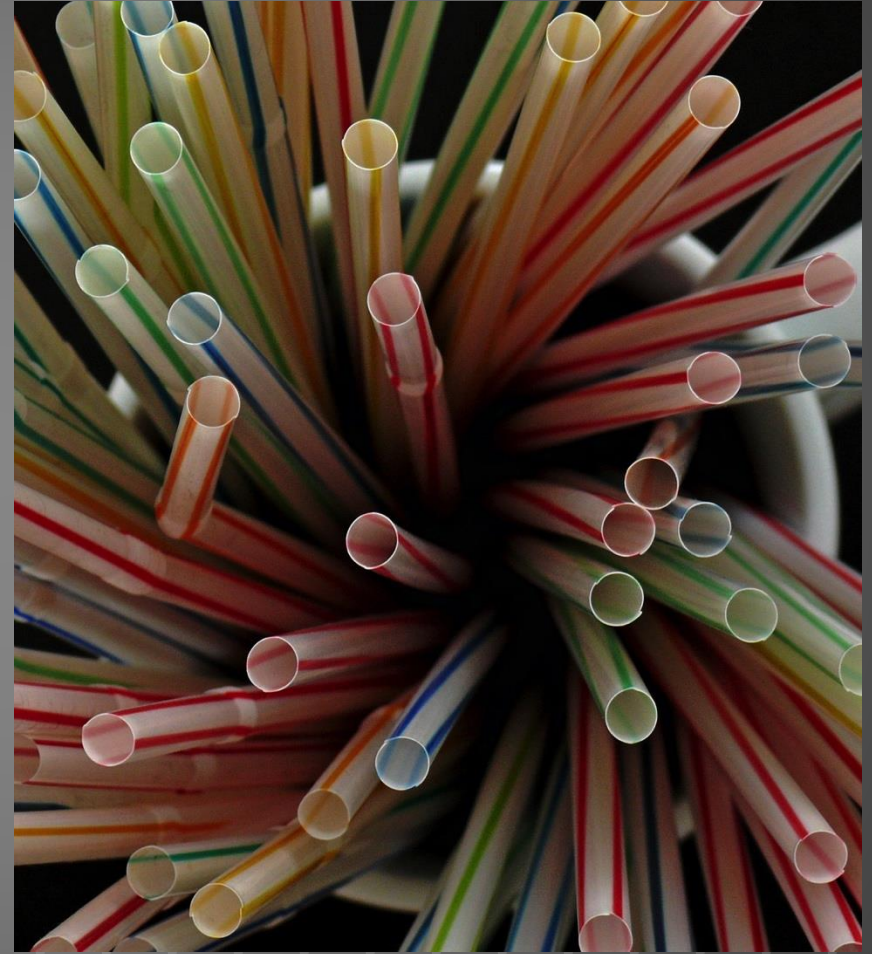
Have I
SOAPED
UP to
prevent
infection?

Is my patient a
awake enough
to GET UP?



Prevent Atelectasis &
Pneumonia!

JUST ANOTHER DEVICE?



SOUNDS LIKE CLABSI & CAUTI

- ▶ Don't put it in unless absolutely necessary and take it out as soon as you can!



AUDIENCE QUESTION

Do you have standard indications for NIPPV in your organization?

- a. Yes
- b. No
- c. I am not sure

AVOID UNNECESSARY INTUBATIONS

- ▶ Indications for intubation
 - ▶ upper airway patency
 - ▶ protection from aspiration
 - ▶ significant compromise to oxygenation/ventilation

- ▶ *Early intervention in oxygenation/ventilation compromise can defer intubation*

NON INVASIVE METHODS

- ▶ Indications for CPAP or BiPAP use:
 - ▶ Respiratory failure not requiring immediate intubation with:
 - ▶ medically unacceptable or worsening alveolar hypoventilation
 - ▶ acute respiratory acidosis
 - ▶ ventilatory muscle dysfunction/fatigue
 - ▶ severe respiratory distress
 - ▶ unacceptable hypoxemia despite supplemental oxygen
 - ▶ Intubation contraindicated or refused
 - ▶ Post-extubation respiratory difficulty
 - ▶ reintubation may be avoided with a trial of BiPAP

VENTILATOR-ASSOCIATED
EVENTSNOT ON MY WATCH

PREVENTION STRATEGIES

- ▶ Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals: 2014



9. Klompas M, Branson R, Eichenwald EC, et al. Strategies to prevent ventilator-associated pneumonia in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol.* 2014 Aug;35(8):915-36. PMID: 25026607.

IF INTUBATED.....IMMEDIATE LOW TIDAL VOLUME VENTILATION

▶ Prevent ARDS

- ▶ Use positive end-expiratory pressure ≥ 5 cm H₂O
 - ▶ not zero end-expiratory pressure
- ▶ Maintain plateau pressure at ≤ 30 cm H₂O
- ▶ Use tidal volume of **6–8 cc/kg** predicted body weight in patients who do not have ARDS
- ▶ **4-6 cc/kg** predicted body weight in patients who do have ARDS

CURRENT EVIDENCE DIRECTS US TO.....

- ▶ Attempt to manage ventilated patients without sedation
 - ▶ **WAKE Up**
- ▶ Elevate the head of the bed 30–45 degrees
- ▶ Provide endotracheal tubes with subglottic suction
- ▶ Judicious Fluid & Blood Transfusions Management



16. Klompas M, Branson R, Eichenwald EC, et al. Strategies to prevent ventilator-associated pneumonia in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol* 2014;35(8):915-936. PMID: 25026607.

AND.....

1. Assess and treat pain first (may be sufficient)
2. If patient remains agitated after adequately treating pain
 - Start with bolus sedation as needed
 - Use continuous sedation if boluses exceed 3 per hour
3. Avoid continuous benzodiazepines in most patients
4. Interrupt sedation daily
 - If necessary to restart, use lowest dose possible to maintain target level of consciousness

5. Avoid deep sedation; instead, target awake or alert
6. Screen for delirium with validated tool
 - If delirious, first seek reversible causes and attempt nonpharmacological management
7. Facilitate early progressive mobility
 - ▶ GET Up

ICU WAKE UP To Breathe

17. Barr J, Fraser GL, Puntillo K, et al.; American College of Critical Care Medicine. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. Crit Care Med. 2013 Jan;41(1):263-306. PMID: 23269131.

BEST PRACTICES FOR VAE REDUCTION (SUMMARY)

RECOMMENDATION	INTERVENTION
Basic practice	<ul style="list-style-type: none">• Use noninvasive positive pressure ventilation in selected populations• Manage patients without sedation whenever possible• Interrupt sedation daily• Assess readiness to extubate daily• Perform SATs with sedatives turned off• Facilitate early mobility• Use endotracheal tubes with subglottic secretion drainage ports for patients expected to require greater than 48 or 72 hours of MV• Change the ventilator circuit only if visibly soiled or malfunctioning• Elevate HOB to 30– 45°
Special approaches	<ul style="list-style-type: none">• Select oral or digestive decontamination• Regular oral care with chlorhexidine• Prophylactic probiotics• Ultrathin polyurethane endotracheal tube cuffs• Automated control of endotracheal tube cuff pressure• Saline instillation before tracheal suctioning• Mechanical tooth brushing
Generally not recommended	<ul style="list-style-type: none">• Silver-coated endotracheal tubes• Kinetic beds• Prone positioning

INTERVENTION BUNDLE CHECKLIST

PROCESS MEASURE	DATE	Y/N	COMMENTS
Continuous subglottic suctioning			
Assess readiness to extubate with spontaneous breathing trials (SBTs)			Paired SBTs and SATs
Interrupt sedation daily with spontaneous awakening trials (SATs)			Note contradictions here
Ambulate according to protocol			Note level here
Regular mouth care (without chlorhexidine)			
Elevate head of bed (HOB) 30–45°			
Conservative fluid management			
Blood transfusions given			Rationale:
Low tidal volume			Identify:

ROADMAP FOR ABCDEF BUNDLE



www.iculiberation.org

Assess, Prevent,
and Manage Pain

Both Spontaneous
Awakening Trials
and Spontaneous
Breathing Trials

Choice of
Analgesia and
Sedation

Delirium: Assess,
Prevent and
Manage

Family
Engagement and
Empowerment

Early Mobility and
Exercise

PADIS
GUIDELINES
ABCDEF BUNDLE
IMPROVE
OUTCOMES

TABLE TOP DISCUSSION



Which element of the ABCDEF bundle do you have in place?

How did you select where to start?

A ASSESS, PREVENT, AND MANAGE PAIN

Assess

- Assess pain > 4x/ shift & PRN
- Significant pain with pain score >3 or CPOT >2

Prevent

- Administer pre-procedural interventions or analgesia
- **Treat pain first, then sedate**

Treat

- Treat pain within 30 minutes of detecting and reassess
- Incorporate both non-pharmacological and pharmacological treatments

CPOT - CRITICAL CARE PAIN OBSERVATION TOOL

INDICATOR	SCORE	
FACIAL EXPRESSION	Relaxed, neutral	0
	Tense	1
	Grimacing	2
BODY MOVEMENTS	Absence of movements	0
	Protection	1
	Restlessness	2
MUSCLE TENSION (evaluate by passive flexion and extension of upper extremities)	Relaxed	0
	Tense, rigid	1
	Very tense or rigid	2
COMPLIANCE WITH VENTILATOR (intubated patients)	Alarms not activated; easy ventilation	0
	Coughing but tolerating	1
	Fighting ventilator	2
OR		
VOCALIZATION (extubated patients)	Talking in normal tone or no sound	0
	Sighing, moaning	1
	Crying out, sobbing	2

CPOT range = 0 – 8; CPOT >2 is significant

Society of Critical Care Medicine. (n.d.) Implementing the a component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Assess-Prevent-Manage-Pain.pdf>

B

BOTH SPONTANEOUS AWAKENING TRIALS & SPONTANEOUS BREATHING TRIALS

- ▶ Daily spontaneous awakening trials (SAT) showed a decrease in the duration of mechanical ventilation
 - ▶ Pause sedation infusion until patient is awake
 - ▶ Restart at 50% prior dose
- ▶ Spontaneous breathing trials (SBT) Increases opportunity for effecting independent breathing
 - ▶ Duration a minimum of 30 minutes
 - ▶ Requires communication and coordination between RN, RT, and MD

Society of Critical Care Medicine. (n.d.) Implementing the b component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Both-Spontaneous-Awakening-Breathing-Trials-SBT-SAT.pdf>

SAT Safety Screen

- No active seizures
- No alcohol withdrawal
- No agitation
- No paralytics
- No myocardial ischemia
- Normal intracranial pressure

SAT Failure

- Anxiety, agitation, or pain
- Respiratory rate > 35/min
- Oxygen saturation <88%
- Respiratory distress
- Acute cardiac arrhythmia

Society of Critical Care Medicine. (n.d.) Implementing the b component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Both-Spontaneous-Awakening-Breathing-Trials-SBT-SAT.pdf>

SBT Safety Screen

- No agitation
- Oxygen saturation $\geq 88\%$
- $\text{FiO}_2 \leq 50\%$
- $\text{PEEP} \leq 7.5 \text{ cm H}_2\text{O}$
- No myocardial ischemia
- No vasopressor use
- Inspiratory efforts

SBT Failure

- Respiratory rate $> 35/\text{min}$
- Respiratory rate $< 8/\text{min}$
- Oxygen saturation $< 88\%$
- Respiratory distress
- Mental status change
- Acute cardiac arrhythmia

Society of Critical Care Medicine. (n.d.) Implementing the b component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Both-Spontaneous-Awakening-Breathing-Trials-SBT-SAT.pdf>

C

CHOICE OF ANALGESIA AND SEDATION

- ▶ Goal of sedation:
 - ▶ Pain: 3 or less or 2 or less (CPOT)
 - ▶ Sedation: RASS = +1 to -2
 - ▶ Delirium: CAM-ICU Negative
- ▶ Treat pain FIRST then sedate
- ▶ Not all mechanically ventilated patients need to be started on IV opioids and/or sedation infusions following intubation
- ▶ Non-benzodiazepine sedative are associated with

better ICU outcomes

Society of Critical Care Medicine. (n.d.) Implementing the c component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Choice-Analgesia-Sedation.pdf>

Richmond Agitation-Sedation Scale (RASS)

Score	Term	Description	
+4	Combative	Overtly combative, violent, immediate danger to staff	
+3	Very agitated	Pulls or removes tube(s) or catheter(s), aggressive	
+2	Agitated	Frequent nonpurposeful movement, fights ventilator	
+1	Restless	Anxious but movements not aggressively vigorous	
0	Alert and calm		
-1	Drowsy	Not fully alert but has sustained awakening (eye opening/eye contact) to <i>voice</i> (≥ 10 seconds)	} Verbal Stimulation
-2	Light sedation	Briefly awakens to <i>voice</i> with eye contact (< 10 seconds)	
-3	Moderate sedation	Movement or eye opening to <i>voice</i> (but no eye contact)	
-4	Deep sedation	No response to voice but movement or eye opening to <i>physical</i> stimulation	} Physical Stimulation
-5	Unarousable	No response to <i>voice</i> or <i>physical</i> stimulation	

WHAT SEDATIVES ARE COMMON IN YOUR ICU?



D DELIRIUM: ASSESS, PREVENT, AND MANAGE

- ▶ Utilize Confusion Assessment Method for ICU (CAM-ICU) or another validated assessment method
- ▶ When delirium is present look for reversible causes
- ▶ Intervene per nursing protocol
 - ▶ Consult pharmacy for medication adjustments
 - ▶ Immobility
 - ▶ Visual and hearing impairments
 - ▶ Nutrition and dehydration
 - ▶ Pain

Society of Critical Care Medicine. (n.d.) Implementing the d component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Delirium-Bundle-Implementation-Assess-Prevent-Manage.pdf>

DEFINITION OF DELIRIUM

- ▶ Delirium is a common syndrome in hospitalized adults characterized by:
 - ▶ acute onset of altered mental status
 - ▶ fluctuating mental status
 - ▶ difficulty sustaining attention
 - ▶ altered sleep-wake cycle,
 - ▶ psychotic features
 - ▶ such as hallucinations and delusions.

TYPES OF DELIRIUM



1.6% of cases

▶ Hyperactive

- ▶ often called ICU Psychosis

54.1% of cases

▶ Mixed

- ▶ fluctuation between hypo and hyper

43.5% of cases

▶ Hypoactive

- ▶ also called quiet delirium

DELIRIUM ASSESSMENT

- ▶ If delirium is not screened for using a validated delirium screening tool it is missed ~75% of time.

Inouye SK *Arch Intern Med.* 2001;161:2467-2473.

Devlin JW *Crit Care Med.* 2007;35:2721-2724.

Spronk PE *Intensive Care Med.* 2009;35:1276-1280.

van Eijk MM *Crit Care Med.* 2009;37:1881-1885.

Delirium: *The Canary in the Coal Mine*



Under recognized form
of organ dysfunction

Up to 80% of all ICU pts

Up to 25% of all
hospitalized pts

Up to 40% of elderly
hospitalized pts

Longer delirium =
Greater impairment

Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet

1. Acute Change or Fluctuating Course of Mental Status:

- Is there an acute change from mental status baseline? OR
- Has the patient's mental status fluctuated during the past 24 hours?

NO

**CAM-ICU negative
NO DELIRIUM**

YES

2. Inattention:

- "Squeeze my hand when I say the letter 'A'."
Read the following sequence of letters:
SAVEAHAART or CASABLANCA or ABADBADAAY
ERRORS: No squeeze with 'A' & Squeeze on letter other than 'A'
- If unable to complete Letters → Pictures

0 - 2
Errors

**CAM-ICU negative
NO DELIRIUM**

> 2 Errors

3. Altered Level of Consciousness

Current RASS level

RASS other
than zero

**CAM-ICU positive
DELIRIUM Present**

RASS = zero

4. Disorganized Thinking:

1. Will a stone float on water?
2. Are there fish in the sea?
3. Does one pound weigh more than two?
4. Can you use a hammer to pound a nail?

Command: "Hold up this many fingers" (Hold up 2 fingers)
"Now do the same thing with the other hand" (Do not demonstrate)
OR "Add one more finger" (If patient unable to move both arms)

> 1 Error

0 - 1
Error

**CAM-ICU negative
NO DELIRIUM**

E

EARLY MOBILITY AND EXERCISE

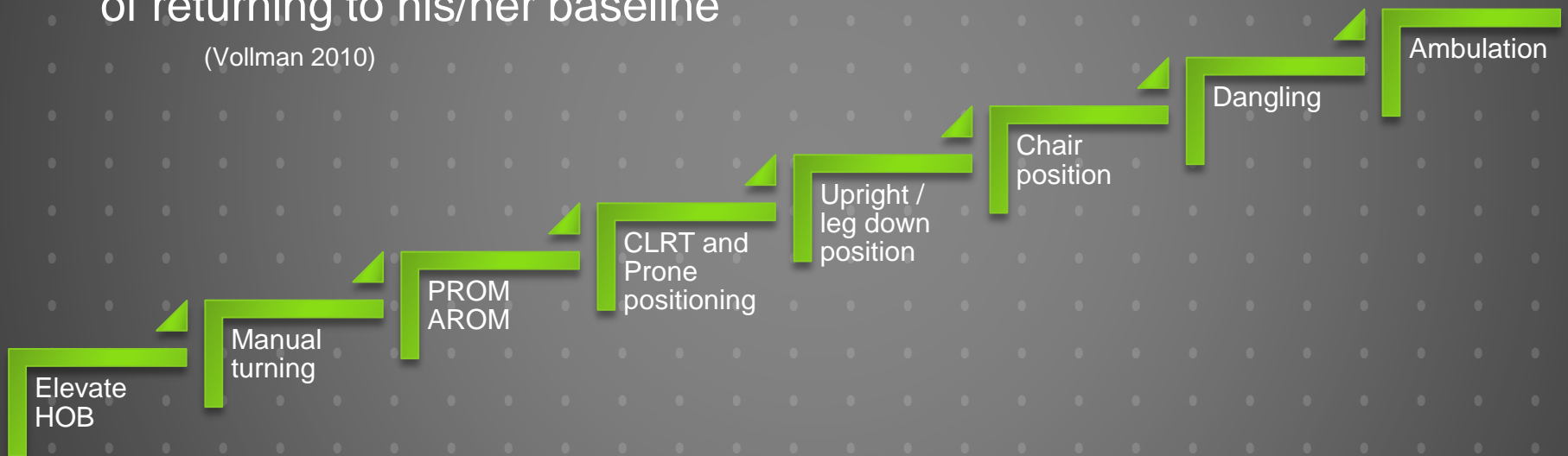
- ▶ Treatment based on patients prior activity and goals
- ▶ Coordination between PT, RN, and RT to encourage patients to perform active movements if possible
- ▶ New study suggest that in the ICU there is a 3%-11% strength loss every day in bed
- ▶ Early mobility has shown:
 - ▶ Decrease in ICU and hospital length of stay
 - ▶ Improved overall physical function
 - ▶ Decreased duration of MV

Society of Critical Care Medicine. (n.d.) Implementing the e component of the abedef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Early-Mobility-Exercise.pdf>

EARLY PROGRESSIVE MOBILITY

- ▶ Progressive mobility is defined as a series of planned movements in a sequential matter beginning at a patient's current mobility status with goal of returning to his/her baseline

(Vollman 2010)



Vollman, KM. Introduction to Progressive Mobility. Crit Care Nurs. 2010;30(2):53-55.

THE NEW ICU

- ▶ Early Mobilization
- ▶ Decrease Delirium by 50%
- ▶ Decrease ICU length of stay by 25%
- ▶ Increase the likelihood of return to independence by the time of discharge by nearly 75%.



DISCUSSION

- ▶ Are you walking ICU patients who are on ventilators in your hospital?



F

FAMILY ENGAGEMENT AND EMPOWERMENT

- ▶ Keep ICU families informed and involved in decision making by allowing them to participate in rounds and allowing them to be involved in patient care
- ▶ Patient benefits:
 - ▶ Decrease in anxiety confusion, agitation
 - ▶ Decrease in CV complications and ICU LOS
 - ▶ Increase in feelings of security and patient satisfaction
 - ▶ Increase in quality and safety

Society of Critical Care Medicine. (n.d.) Implementing the f component of the abcdef bundle. Retrieved from: <http://www.iculiberation.org/SiteCollectionDocuments/ICU-Liberation-ABCDEF-Bundle-Implementation-Family-Engagement-Empowerment.pdf>

MYTHS/MISCONCEPTIONS

- ▶ Family presence interferes with care
- ▶ Family presence exhausts the patient
- ▶ Family presence is a burden to families
- ▶ Family presence spreads infection

Institute for Patient and Family Centered Care

<http://www.ipfcc.org>

CURRENT REALITIES

- ▶ “Social” Isolation – separates patients from families
- ▶ Families know the patient’s cognitive function
- ▶ 90% US ICUs surveyed in 2008 had restrictive visitation policies
 - ▶ 62% had 3 or more restrictions
 - ▶ Restrictions: hours, visitor number, visitor age

Cacioppo, JT 2003. *Perspec in Biolog and Med*, 46(3), S39-S52.

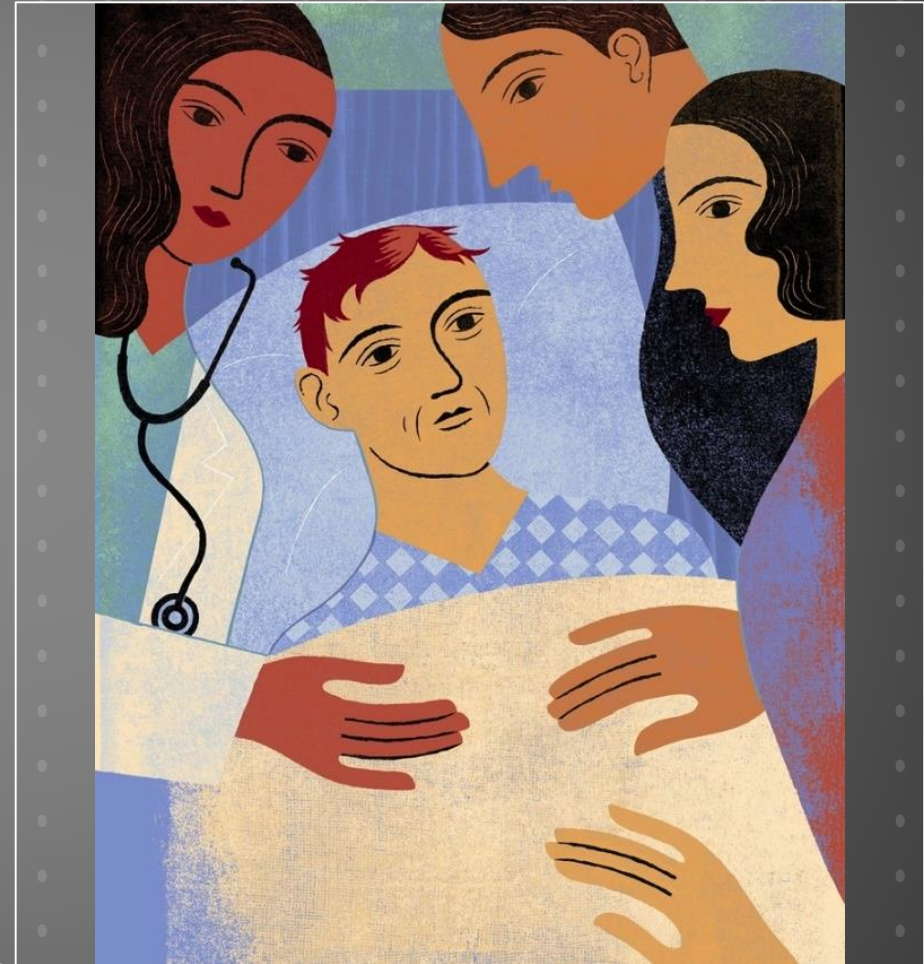
Clark, PA 2003. *Joint Commission J Qualit and Safety*, 29(12), 659-70.

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Liu, V. 2013 *Critical Care*, 17(2), R71.

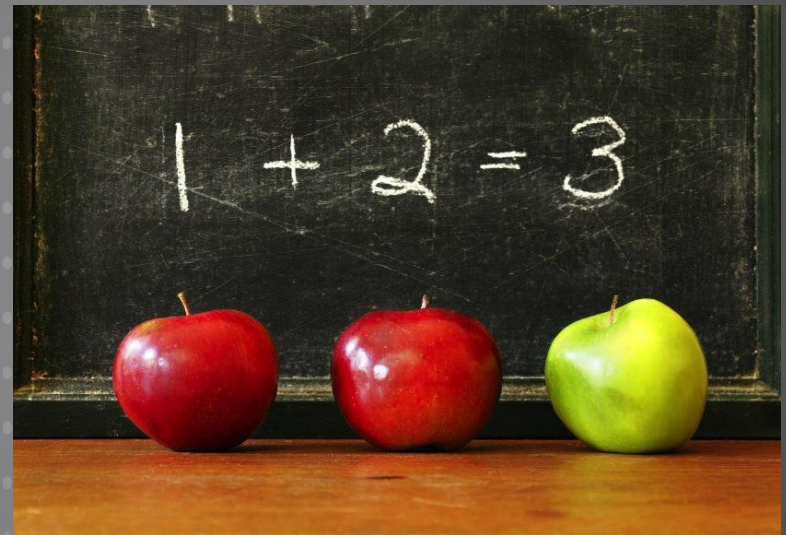
CREATING THE RIGHT ENVIRONMENT

- ▶ Family Presence
 - ▶ Open, flexible visitation
- ▶ Family and Patient Engagement
 - ▶ Preprinted brochures
 - ▶ Participation in rounds
- ▶ Family and Patient Empowerment
 - Shared-Decision Making
 - Safety
 - Future Care Expectations



SUMMARY OF OPTIMAL RESPIRATORY CARE

- ▶ Understand your risk-
collect the data
- ▶ Prevent intubations
- ▶ Reduce
complications
- ▶ Get patients off the
ventilator



QUESTIONS



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2. Klompas M, Khan Y, Kleinman K, et al. Multicenter evaluation of a novel paradigm for complications of mechanical ventilation. *PLoS One*. 2011 Mar 22;6(3):e18062. PMID: 21445364.
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4. Klompas M. Interobserver variability in ventilator-associated pneumonia surveillance. *Am J Infect Control*. 2010 Apr;38(3):237-9. PMID: 20171757.
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10. Klompas M, Speck K, Howell MD, et al. Reappraisal of routine oral care with chlorhexidine gluconate for patients receiving mechanical ventilation: systematic review and meta-analysis. *JAMA Intern Med*. 2014 May;174(5):751-61. PMID: 24663255.

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BE BACK IN 10 MINUTES.....



DRIVER
DIAGRAMS
– A
THEORY
OF
CHANGE



COMMIT TO CHANGE

- ▶ Next Steps? What's yours?



COMMITMENT

The chicken is involved. The pig is committed.

YOUR JOURNEY

Where to start?

1. Look at both process and outcome measures
2. Track your own performance over time
3. Do we see improvements?



WHAT'S A DRIVER DIAGRAM?

- ▶ A **visual organization** of **key aspects** of a **system** and their **relationship** to one another
- ▶ A **logic model/hypothesis** to express the **system** you are working to improve
- ▶ A **communication** of your improvement approach



COMPONENTS

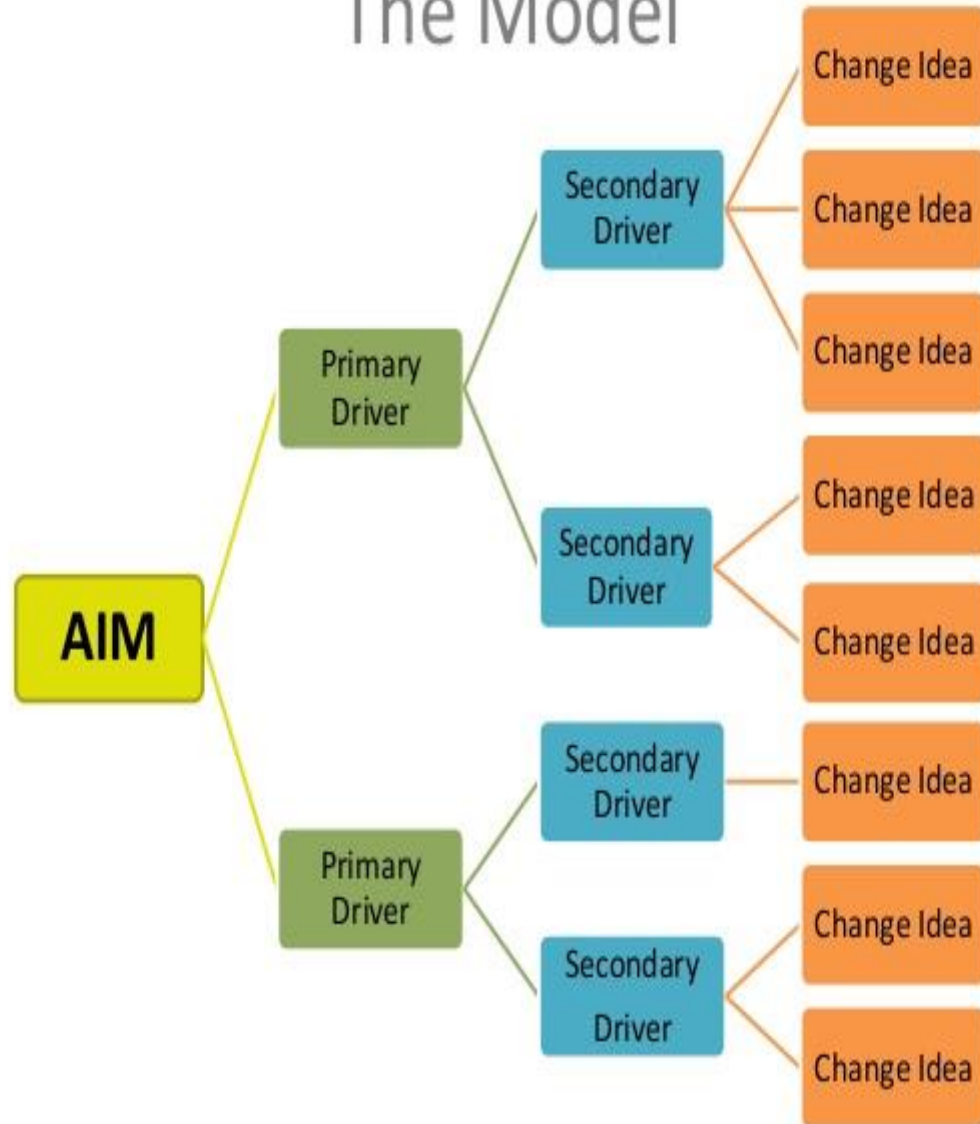


AIM

**Primary
Drivers**

**Secondary
Drivers**

The Model



AIM

- ▶ How good by when?
- ▶ Our aim
 - ▶ To have a son or daughter graduate from college by the time they are 21 years old.



DRIVERS

Primary Drivers

- ▶ The few key things that are needed for your child to graduate from college by the age of 21 years old.

Secondary Drivers

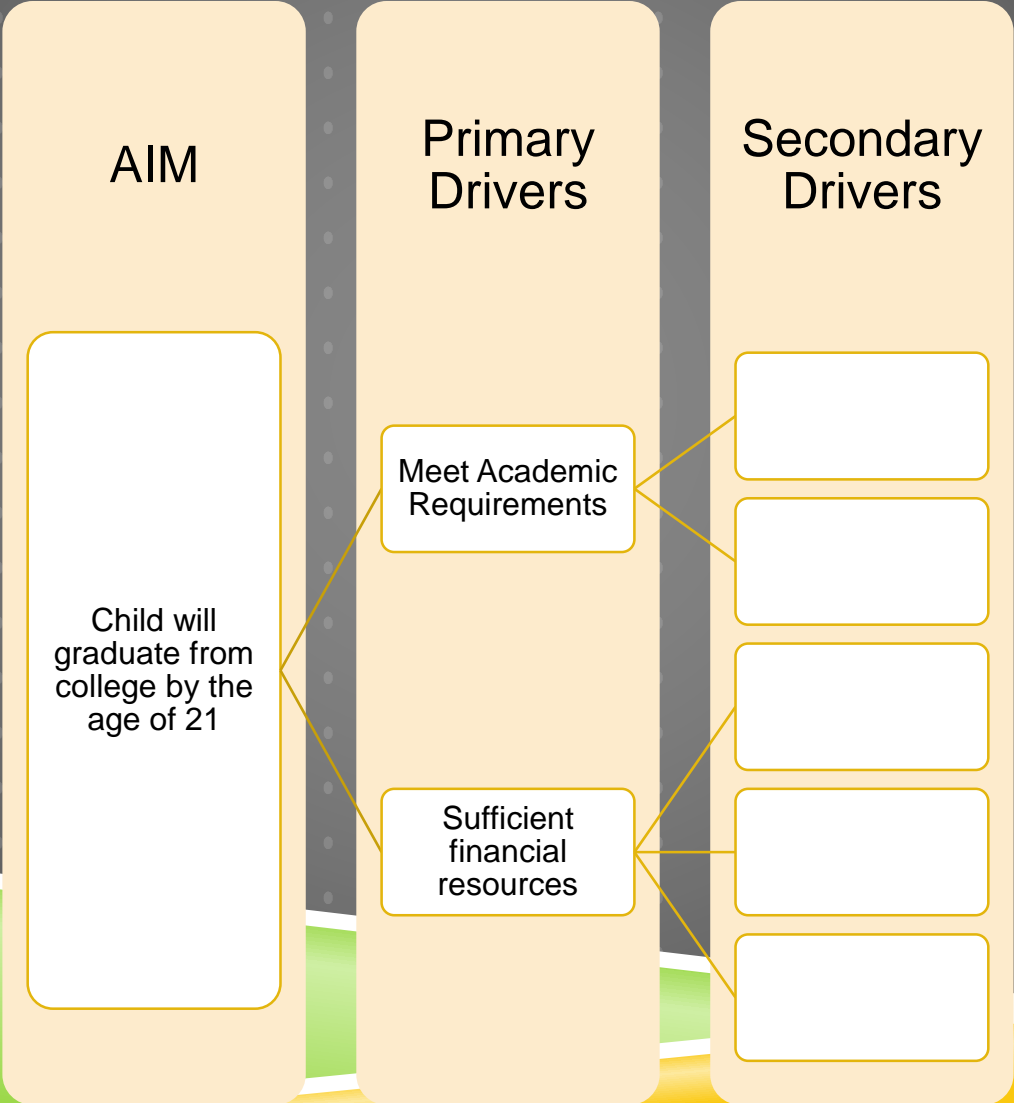
- ▶ The main items that are needed to accomplish the primary drivers
- ▶ May relate to one or more primary drivers

IDEAS TO TEST

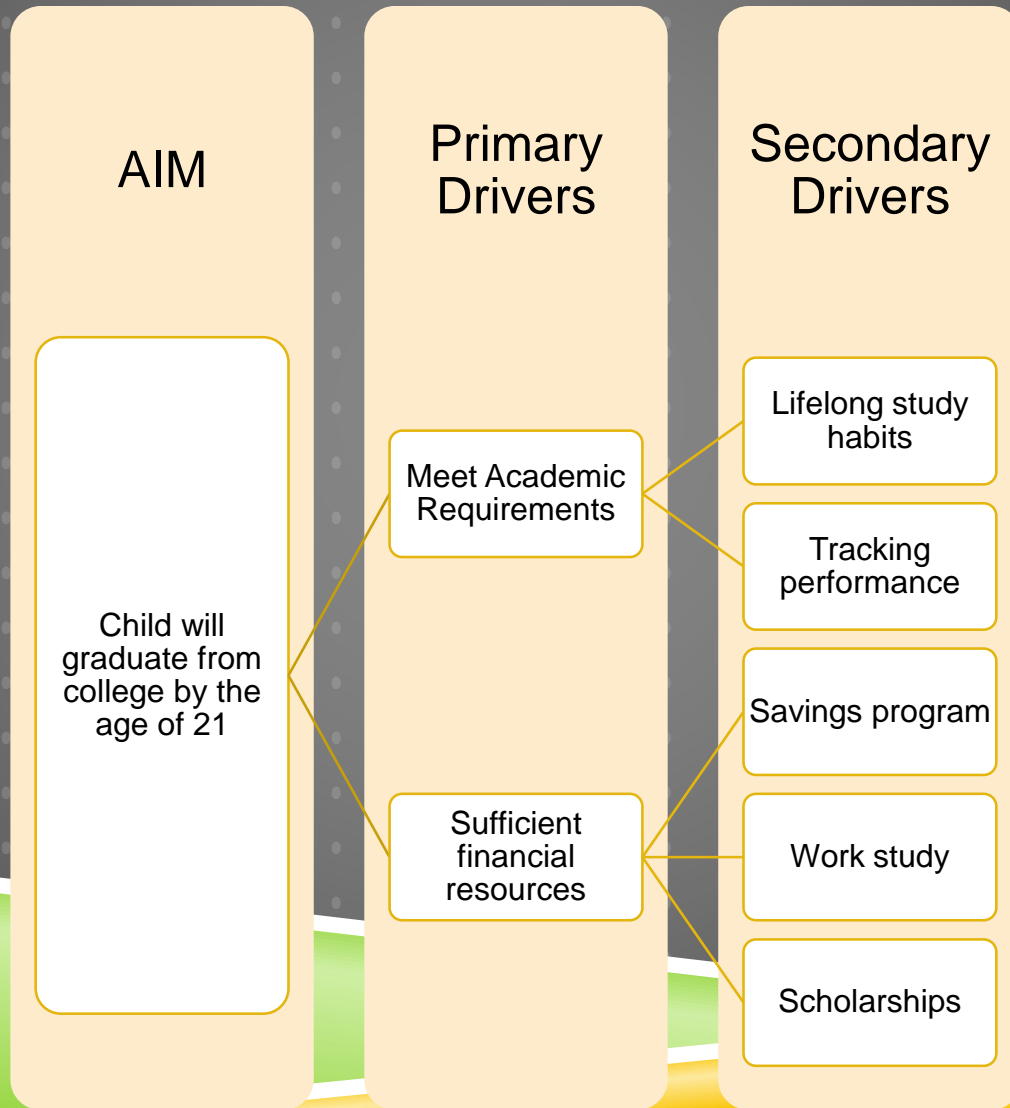
- ▶ What specific concepts can you test or try that will help you accomplish my secondary drivers?
- ▶ What are others doing?



DRIVER DIAGRAM WORKSHEET



DRIVER DIAGRAM WORKSHEET



Reduce 30-day hospital-wide all cause unplanned readmission rate by 2.3% by July 30, 2014

Data Analysis

Data analysis & chart review to identify patients at high risk for readmission (B)

Develop criteria to flag patients at high risk for readmission in EMR (B)

Communication with Post-Acute Providers

Expand MA Hlway access to additional providers (A)

Update provider directory to ensure accurate contact information (B)

Care Coordination

Implement CTI coaching model (B)

Add 2 Care Coordinators to coordinate process improvements (A/B)

Add 2 Pharmacy staff for inpatient floors (B)

Patient & Family Education

Expand use of Teach Back tools for multiple diagnoses (B)

Assist patients & families to sign up for electronic patient portal (B)

PREVENT VAE

ELEVATE THE HEAD OF BED (HOB) TO BETWEEN 30-45 DEGREES	USE VISUAL CUES	Change Idea
	IDENTIFY A DESIGNATED STAFF MEMBER TO CHECK HOB ELEVATION ON EACH SHIFT	Change Idea
	ESTABLISH A PROCESS FOR HOB ELEVATION IN NON-ICU AREAS AND DURING TRANSPORT	Change Idea
	USE ORDER SETS FOR HOB ELEVATION CHECKS	Change Idea
MANAGE SUBGLOTTIC SECRETION DRAINAGE	USE ENDOTRACHEAL TUBE (ETT) WITH SUBGLOTTIC SECRETION MANAGEMENT AND CREATE PROTOCOLS FOR REGULAR ORAL CARE	Change Idea
USE LOW VOLUME TIDAL VOLUME VENTILATION	INITIATE LOW VOLUME TIDAL VOLUME VENTILATION UNLESS CONTRAINDICATED	Change Idea
	ENLIST INTERDISCIPLINARY SUPPORT	Change Idea
USE THE ABCDEF BUNDLE	"A" — ASSESS, PREVENT AND MANAGE PAIN	Change Idea
	"B" — BOTH SPONTANEOUS AWAKENING TRIALS (SAT) AND SPONTANEOUS BREATHING TRIALS (SBT)	Change Idea
	"C" — CHOICE OF ANALGESIA AND SEDATION	Change Idea
	"D" — DELIRIUM MONITORING AND MANAGEMENT	Change Idea
	"E" — EARLY PROGRESSIVE MOBILIZATION AND AMBULATION	Change Idea
	"F" — FAMILY ENGAGEMENT AND EMPOWERMENT	Change Idea

CREATE YOUR OWN DRIVER DIAGRAM

Choose

Choose a goal or aim you've set for yourself or family or your project

Create

Create a quantifiable AIM by a specific date

Make

Make a hypothesis of 2-5 primary drivers that will help you reach your aim

Take

Take at least one primary driver and create 2-5 secondary drivers

SHARE YOUR IDEAS FOR CHANGE





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